

REMARKS

Reconsideration of this application in light of the present amendment and remarks is respectfully requested.

The drawings were objected to. Replacement drawing sheets are enclosed, and Fig. 28 has been amended in accordance with the Examiner's directions.

Claims 1-13, 17 and 18 have been rejected.

Claims 13, 17 and 18 have been canceled, without prejudice.

Claims 1-3, 5 and 7-10 have been amended.

Claim 27 has been added.

Claims 1-12 and 27 are pending in this application.

Rejection under 35 U.S.C. §101

Claim 13 has been rejected under 35 U.S.C. §101 because the claimed invention is directed to non-statutory subject matter.

Claim 13 has been canceled, thereby rendering this rejection moot.

Rejection under 35 U.S.C. §112

Claim 1 has been rejected under 35 U.S.C. §112, first paragraph, as based on a disclosure which is not enabling. The Examiner has introduced a limitation that the second node must know the intermediate addresses that should be included in the route message, and has claimed that this is critical to the invention and should have been included in the disclosure. Applicants respectfully disagree in that it is not essential that the second node know the intermediate addresses that should be included in the route message inasmuch as applicant's novel use of an extended Binding Update message that includes a "care-of" route, instead of an address, where the care-of route is the ordered list of IP addresses that a node will use to send packets. Moreover, these IP addresses can be supplied by higher levels in the hierarchy. See page 22 line 1 to page 23 line 9 of the text, thereby clearly enabling claim 1. This aspect of the invention is further discussed with regard to the §102 rejection below.

Applicants respectfully request that the Examiner withdraw this rejection.

Claims 17 and 18 have been rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention.

Claims 17 and 18 have been canceled, thereby rendering this rejection moot.

Rejection under 35 U.S.C. §102

Claims 1-6, 10-12, 17 and 18 (and 27) have been rejected under 35 U.S.C. §102(a) as being anticipated by Ernst (“Network Mobility Support in IPv6”, a PhD thesis to the Dept. of Mathematics and Computer Science at the Universite Joseph Fourier, France, October 29, 2001), hereinafter “Ernst”. This rejection is respectfully traversed.

Claims 17 and 18 have been canceled, inasmuch as the route message of claim 1 is equivalent to the extended binding update of our claim 17.

Claim 27 has been added including all of the recitations of claim 1 in apparatus form, and as such is also addressed in this rejection.

Claim 1 has been amended for clarity by specifying the actions of particular nodes.

Applicant submits that the interpretation of the Examiner by which Ernst discloses features of claim 1 (and 27) is incorrect and inapplicable for the following reasons:

Focusing on the “receiving a route message....on page 90, Fig. 7.6 “Binding Update 2”)”:

- The Prefix Scope Binding Update (PSBU) message of Ernst is sent by the mobile router (MR) to the VMN's CN (and this process is transparent to the VMN). Hence, in Ernst, the VMN (which can be associated with the “said second communication node” in claim 1) is **not** sending the PSBU (which can be associated with the “route message” in claim 1). Thus Ernst is different from claim 1 which says that the first communication node (e.g. CN) receives the route message from the second communication node.
- In addition the PSBU is clearly different from the route message of claim 1 because the PSBU (as defined in Ernst, and as is known in the art) is not including a plurality of intermediary addresses (between the node sending and the node receiving the PSBU), but instead include one and only one address (the care-of address of the node sending the PSBU). This care-of address is necessarily assigned to one of the network interface of the node sending the PSBU, while in claim 1 the route message can include addresses which are not assigned on the node sending the route message (but instead assigned to upper node, typically upper mobile routers).

- The “Routing Header Extension” cannot be assumed to cover our route message for the simple reason that this header is not a message sent by the second communication node (e.g. VMN) to the first communication node (e.g. CN) but instead an extension placed in data packet from the first to the second node to route the packet along a path.
- It should be noted that the prior art term “mobile router” is typically used to designate what is now known in the art as a (Mobile IP) Home Agent; that is a function deployed on a fixed router in the home link of a mobile host (MH) capable of relaying the packet addressed to the MH when the latter is attached to a foreign link. The Mobile IP Home Agent known in the art is incapable of changing its point of attachment to an IP infrastructure. In other words this is a router capable of handling mobility for a MH, but is not mobile itself. This is very different from the mobile router applicant defines in the present invention (and which is in line with the terminology commonly used in the art), which relates to a router capable of moving i.e. changing its point of attachment to an IP infrastructure.

As used in applicant’s invention, a “route message” is a standalone signaling message (i.e. not piggybacked on data packets), as opposed to Ernst where the LSR option is included in data packet sent from the second node to the first node. More specifically, the “route message” is an extension of mobile IP signaling (or even more, of the binding update signaling message), as opposed to Ernst where the LSR is not related to mobile IP.

On the step “generating a preferred communication path in response to said list of intermediate addresses...”: The generation of the path in Ernst is very different from the one in the present invention:

- Ernst relies on the standard path reversal techniques of the LSR mechanism: the first node receives an LSR option from a second node and just needs to reverse the list of addresses received in the incoming LSR option to compute the path to the said first node (and also use an LSR option with the path to route packets to it).

- In contrast, the path computation algorithm of the present invention (see figure 29 and 30) is different in the sense that; a) the list of addresses in our “route message” (i.e. binding update) sent to the first node does not need to be reversed; and b) all the information to compute the path from first to second node is not included in the received “route message”; instead some additional information local to the first node is needed (i.e. the topological location of the first node under a set of nested mobile router, i.e. the first node’s own care-of route).
- A novel aspect of applicant’s invention is having a node using **an extended binding cache** as defined in the invention (i.e. typically the first node of our claim 1). This is different from the binding cache used by the Home Agent of Ernst (and described as prior art in figure 5 of our application), where an entry maps a mobile network prefix (MNP) to a single address that is the care-of address of the mobile router owning the said prefix. In contrast, our extended binding cache (see figure 28) maps a destination node’s address (and possibly a prefix) to a list of addresses, that are care-of addresses of the nested mobile routers on the path (from the node’s owning the extending binding cache) to the said destination node. This list is the care-of source route.
- Upon node1 receiving **the extended binding update** from a node2, node1 computes a care-of source route to node2, and places this care-of source route in its extended binding cache. As explained earlier our extended binding update (which includes a list of addresses, i.e. care-of router) is different from the Ernst’s PSBU, thus the node1 receiving our extended binding update is different from Ernst’s CN’s which received the PSBU.

Accordingly, applicant respectfully submits that claim 1 and 27 are not anticipated by the cited art, and are therefore allowable.

Claims 2 and 3 have been amended to properly follow from claim 1.

Claims 5 and 10 have been amended to clarify a care-of route advertisement message (by fixed and mobile routers inside an aggregation of nested mobile networks).

Claim 12 covers the conditional sending of the extended binding update to a correspondent node based on its location (i.e. whether or not in the same mobile network).

Moreover, Claims 2-6 and 10-12 are dependent on claim 1, incorporated herein, and are therefore allowable as well for the same reasons.

Therefore, applicant requests that this rejection be withdrawn.

Rejection under 35 U.S.C. §103

Claims 7-9 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Ernst in view of Inoue (US 6,587,882). This rejection is respectfully traversed.

Claims 7-9 have been amended to clarify a care-of route advertisement message (by fixed and mobile routers inside an aggregation of nested mobile networks).

Claims 8 and 9 cover behaviors of fixed routers (claim 8), mobile routers (claim 9) for generating their care-of route advertisement messages.

Claims 7-9 are dependent on claim 1, incorporated herein and previously distinguished above, and are therefore allowable as well for the same reasons.

Accordingly, it is respectfully submitted that this rejection has been overcome.

The other references of record have been reviewed and applicant's invention is deemed patentably distinct and nonobvious over each taken alone or in combination.

For the foregoing reasons, applicants respectfully request that the above rejections be withdrawn.

Inasmuch as this amendment distinguishes all of the applicants' claims over the prior art references, for the many reasons indicated above, passing of this case is now believed to be in order. A Notice of Allowance is earnestly solicited.

No amendment made was related to the statutory requirements of patentability unless expressly stated herein. No amendment made was for the purpose of narrowing the scope of any claim, unless applicant has argued herein that such amendment was made to distinguish over a particular reference or combination of references.

In the event that the Examiner deems the present application non-allowable, it is requested that the Examiner telephone the Applicants' attorney at the number indicated below so that the prosecution of the present case may be advanced by the clarification of any continuing rejection or through an Examiner's amendment.

Authorization is hereby given to charge any fees necessitated by actions taken herein to Deposit Account 50-2117.

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